

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of)	MAIL STOP
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Warren Bruce Jackson)	Group Art Unit: 2621
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Application No.: 10/767,386)	Examiner: Gims S. Philippe
)	
Filed: January 28, 2004)	Confirmation No.: 4749
)	
For: METHOD AND SYSTEM FOR)	
DISPLAYING FACIAL FEATURES)	
ON NONPLANAR SURFACES)	
)	

REQUEST FOR RECONSIDERATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action dated December 11, 2007, reconsideration and allowance of the present application are respectfully requested. Claims 1-30 remain pending in the application, of which claims 1, 21 and 30 are independent claims.

On page 2 of the Office Action, claims 1-7, 10-16, 21-25 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Utt et al. (US Patent Application Publication No. 2005/0017924 A1) in view of newly cited US Patent No. 5,850,225 (Cosman). On page 4, claims 17-20, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Utt et al and Cosman in view of US Patent Application No. 2006/0187305 A1 (Trivedi et al). On page 6, claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Utt et al and Cosman in view of US Patent No. 6771237 (Kalt). These rejections are traversed, because the newly cited Cosman patent is merely cumulative to art already of record. The Cosman patent,

considered alone or in combination with the other documents cited in the Office Action, fails to teach or suggest positioning an image on a nonplanar surface to indicate a direction of gaze and enhance nonverbal communication associated with facial features.

In rejecting claims 1, 21 and 30 on page 2 of the Office Action, the Examiner asserts that:

Utt discloses the same method and apparatus for displaying facial feature[s] comprising a non-planar surface (See Utt [0038]); an image generation device that creates an image with facial features on the non-planar surface (See Utt [0011, lines 1-5], [0012, lines 2-5]).

It is noted that although Utt provides a positioning system (See Utt [0059, lines 1- 10]), it is silent about positioning the image on the non-planar surface to indicate a direction of gaze and enhance nonverbal communication associated with the facial features.

The Examiner therefore cites to the newly relied upon Cosman patent and asserts on page 3 of the Office Action that:

However, Cosman discloses a positioning system which positions the image on the non-planar surface to indicate a direction of gaze and enhance nonverbal communication associated with the facial features (See Cosman col. 6, lines 45-56, col. 7, lines 5-28).

Therefore, it is considered obvious that one skilled in the art at the time of the invention would recognize the advantage of modifying Utt's positioning system by providing Cosmans positioning system which positions the image on the nonplanar surface to indicate a direction of gaze and enhance nonverbal communication associated with the facial features. The motivation for performing such a modification in Utt is to take account of the head position as well as orientation relative to the image generation device as taught by Cosman (See Cosman col. 4, lines 63-67).

Applicant respectfully disagrees with the foregoing assertions. None of the documents relied upon by the Examiner, considered individually or in the various combinations relied upon by the Examiner, teach or suggest Applicant's invention as

recited in independent claims 1, 21 and 30. For example, none of these documents, regardless of whether they are considered individually or in combination, disclose or suggest positioning an image on a nonplanar surface to indicate a direction of gaze and enhance nonverbal combination associated with facial features (e.g., positioning a direction of an image of a user's eyes). Such a feature is broadly encompassed by independent claims 1, 21 and 30. The documents relied upon in the Office Action teach away from such a feature, and any effort to have combined features from the cited patent documents in the manner suggested by the Examiner would not have yielded predictable results.

Applicant's exemplary Figure 1 illustrates a video system using a nonplanar display 102 with facial features 104. The nonplanar display 102 can, for example, be a three-dimensional head shape with an image-generating display surface. The display surface can be formed from flexible area-conserving protective display patches which are tiled to cover the surface of a nonplanar head. See, for example, paragraphs [0018] and [0019]. A computer or other processing apparatus can be provided to position the image to appear on each display patch so that facial features appear seamless to a local user.

Figure 2 illustrates an exemplary embodiment that collects prospective images to help preserve eye contact, gaze information and other nonverbal cues of a local user, on a head-shaped nonplanar display 204. Figures 4A, 4B and 4C illustrate exemplary embodiments for generating facial images on a nonplanar surface. For example, using projectors 410, 412 and 414, the image of a remote user can be kept centered on the centered axis of a nonplanar display surface 416.

Figure 5 shows an exemplary method which includes gathering and displaying facial features of a user on a nonplanar display. One or more cameras can be used to gather the images and display them on the nonplanar display device, as described in paragraph [0033].

A positioning system can be used to position an image (e.g., an image of the user's eyes) on the nonplanar display surface to indicate a gaze of the user (step 504). Cameras positioned on the nonplanar display near the local user can collect images of the local user's facial image or expression in step 506. Images of the local user are then transmitted for display on the nonplanar display of the remote user in step 508.

The foregoing features are broadly encompassed by Applicant's independent claims 1, 21 and 30, and are neither taught nor suggested by the documents relied upon by the Examiner. Exemplary embodiments can position an image to indicate a direction of gaze (e.g., eye position) of an individual whose facial features are being displayed. The Utt and Cosman documents disclose a display of an image, but neither discloses positioning the image to indicate a direction of gaze.

The Utt patent document describes a display surface having a three dimensional convex shape, and a projection system, such as the Figure 1 projector 3 which projects onto the display surface 5. Utt simply displays a fixed image (e.g., the image of a planet or an image of a person's head). As acknowledged by the Examiner, Utt fails to disclose or suggest a "positioning system" that positions an image on a nonplanar surface to indicate a direction of gaze and enhance nonverbal communication associated with facial features.

The Cosman document does not overcome the deficiencies of the Utt patent. Cosman discloses a display system wherein a field of view of a flight simulator is displayed to a user (e.g., an aircraft pilot "P" in a flight simulator of Figure 1). The field of view is displayed on a viewing screen 17 of a dome "D". The pilot views a display projected by projector 20 into the dome D. Polygons used to create the displayed images are processed to account for the pilot's position relative to the projector 20 and the orientation of the pilot's head (see col. 4, lines 63-67). The Cosman document is not directed to display of any facial features or any positioning of an image to indicate a direction of gaze.

A combination of features from the Cosman patent with features of the Utt document would have resulted in an additional projection screen, or dome "D", in a vicinity of a user for display of a field of view (e.g., display walls of a conference room in which a user is located). Such a combination would not have resulted in positioning an image (e.g., an image of a pilot's eyes) to indicate a direction of eye gaze. Applicant's presently claimed invention would not have been the predictable result of combining features from the Utt and Cosman patent documents, and features of these documents would not have been readily substitutable to achieve the presently claimed invention.

Thus, there would have been no basis for combining features of the Utt and Cosman documents in the manner suggested by the Examiner. Moreover, even if features of these documents could have been combined, the presently claimed invention would not have resulted. Neither of these documents teach or suggest a system which positions an image on **a nonplanar surface** to indicate a direction of gaze and enhance nonverbal communication associated with facial features.

As such, the apparatus of Applicant's independent claim 1 is allowable. Similarly, independent claims 21 and 30 are allowable.

Applicant's dependent claims are also allowable. The remaining documents relied upon in the rejection of the dependent claims do not overcome the deficiencies of the Utt and Cosman documents.

The Trivedi patent document does not disclose or suggest a "positioning system" as claimed by Applicant. Trivedi does not disclose or suggest a system which positions an image on a **nonplanar surface** to indicate a direction of gaze and enhance nonverbal communication associated with facial features.

The Trivedi document is directed to a digital video imaging system for transforming warped video images into rectilinear video images. Paragraph [0041] of the Trivedi document refers to a video processing device 120 as being, for example, a "desktop computer". Trivedi is directed to a video system which can be installed in vehicles to assist pilots, drivers and security personnel to monitor a passenger cabin and luggage cabin, as described in paragraph [0038]. In paragraph [0075], a driver's viewing direction is described as being computed from a filtered face orientation and driver's direction to an omnicam. A driver's view video can be generated from the omnicam video (e.g., 360 degree view) with a fixed zooming factor to approximate a human field of view as illustrated in Figure 15 of the Trivedi patent document. Paragraph [0085] of the Trivedi patent publication describes estimation of eye-gaze direction for providing a driving view. A rough estimate of a driver's gazing direction is described as being estimated from a driver's face orientation.

The system described in the Trivedi patent document is directed to determining and tracking a person's face orientation. This face detection and tracking is used in applications, such as analyzing the face pose of players at a casino table as described in paragraph [0091]. Other applications include video surveillance as described, for example, at paragraph [0093].

There is no disclosure in the Trivedi patent document of Applicant's claim 1 "positioning system". Trivedi does not disclose how any information acquired using the system disclosed therein can be used to position an image on a **nonplanar** surface. The system disclosed in the Trivedi document merely displays sensed information on a planar video display, such as the devices 121 and 122 of Figure 2.

At best, any combination of the Utt, Cosman and Trivedi patent documents would have resulted in using the signal processing of the Trivedi patent to transform an image produced by the projector 3 of the Utt patent document into a rectilinear image. Such image processing clearly teaches away from the presently claimed invention, which is specifically directed to positioning an image on a nonplanar surface to indicate a direction of gaze and enhance nonverbal communication associated with the facial features.

The Kalt patent was cited in the rejection of dependent claims 8-9 as disclosing a flexible display. This document fails to overcome the deficiencies of the documents discussed above.

Applicant's dependent claims recite additional advantageous features which further distinguish over the documents relied upon by the Examiner such that these claims, along with independent claims 1, 21 and 30, are allowable.

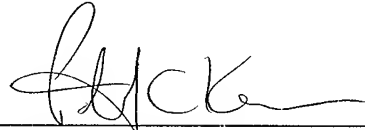
As such, the present application is considered to be in condition for allowance and Notice of Allowance is respectfully solicited.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: March 11, 2008

By: _____

A handwritten signature in black ink, appearing to read 'P. Keane', written over a horizontal line.

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